

FIG. 1

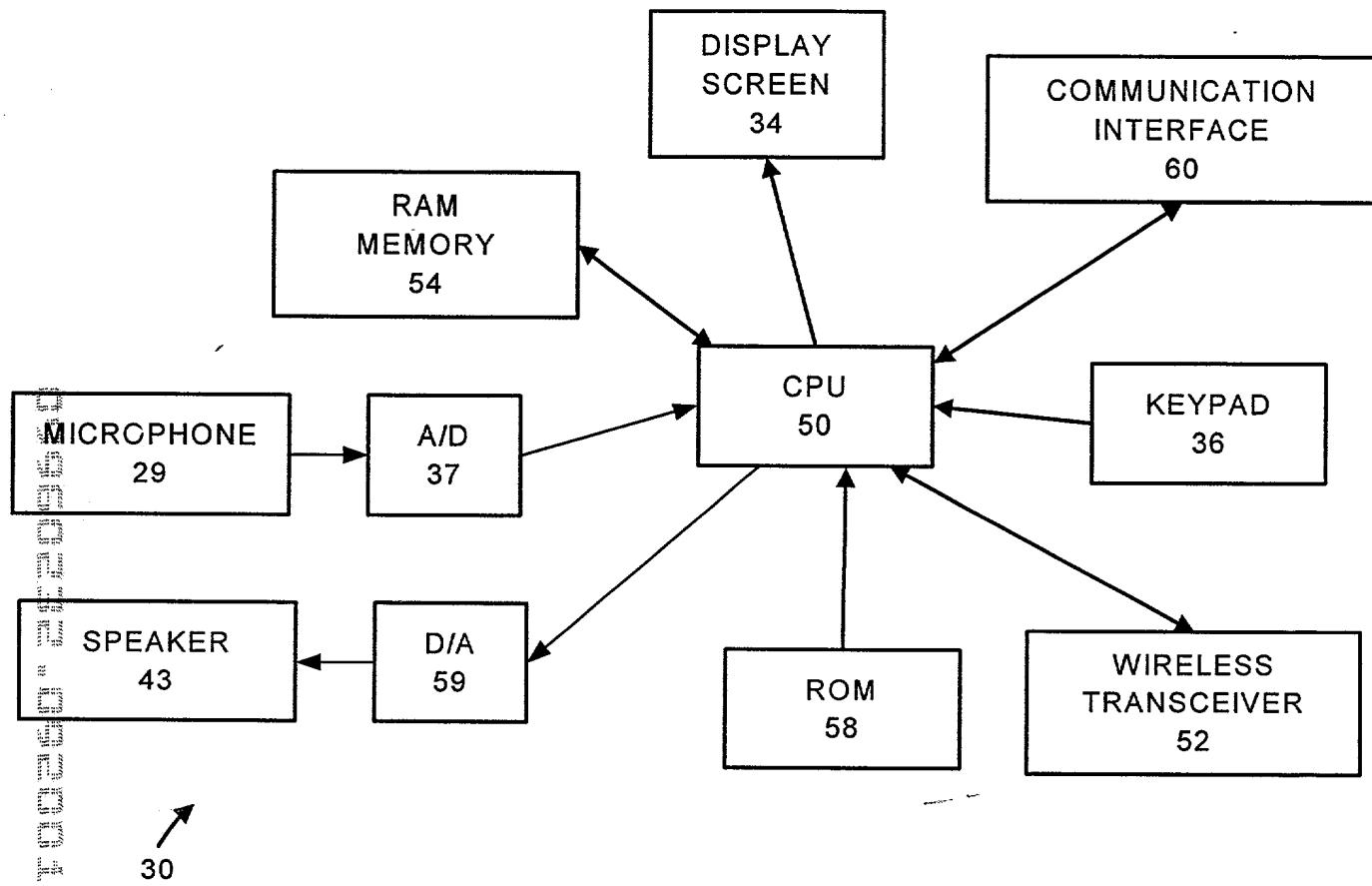


FIG.2

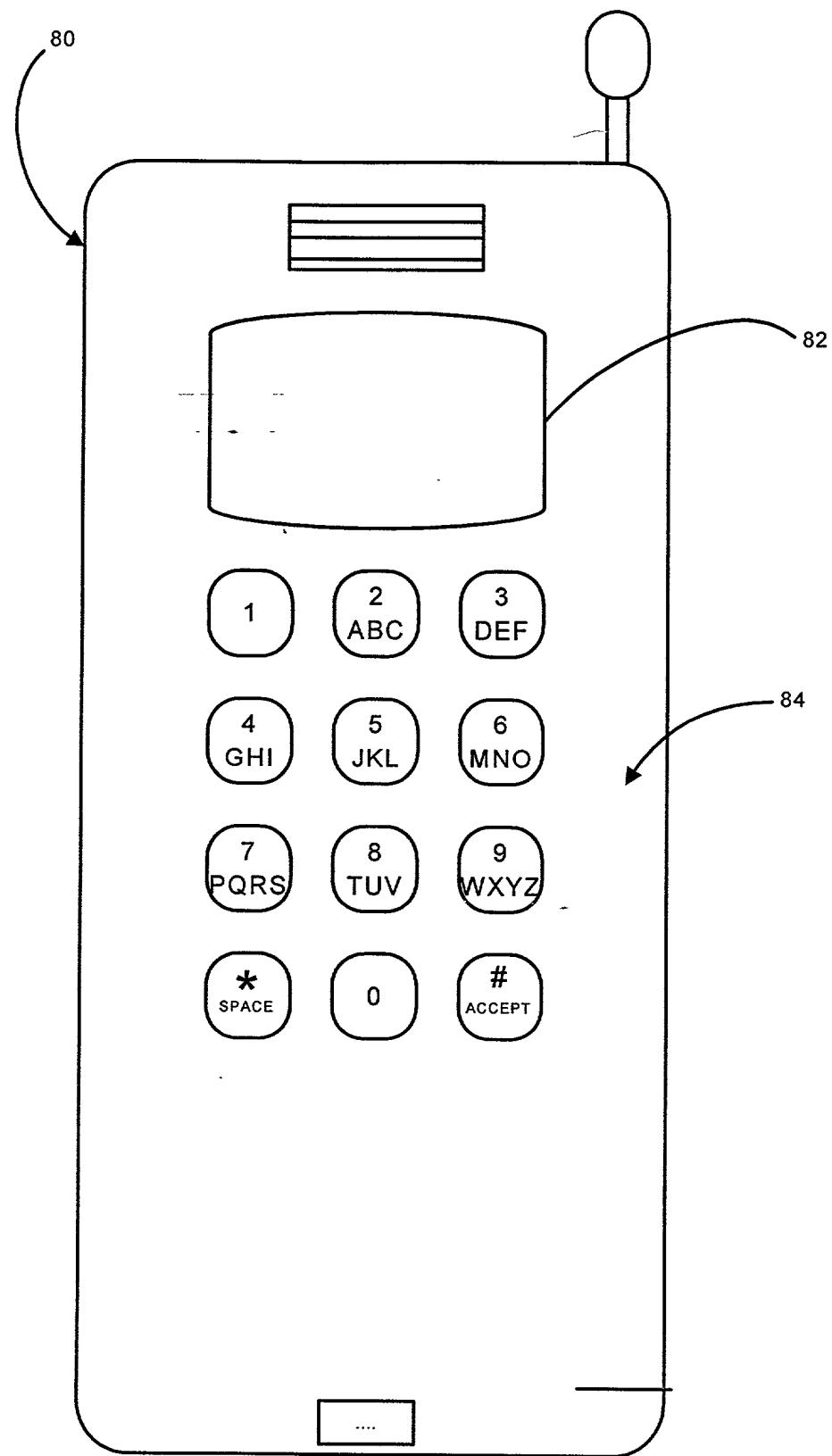


FIG. 3

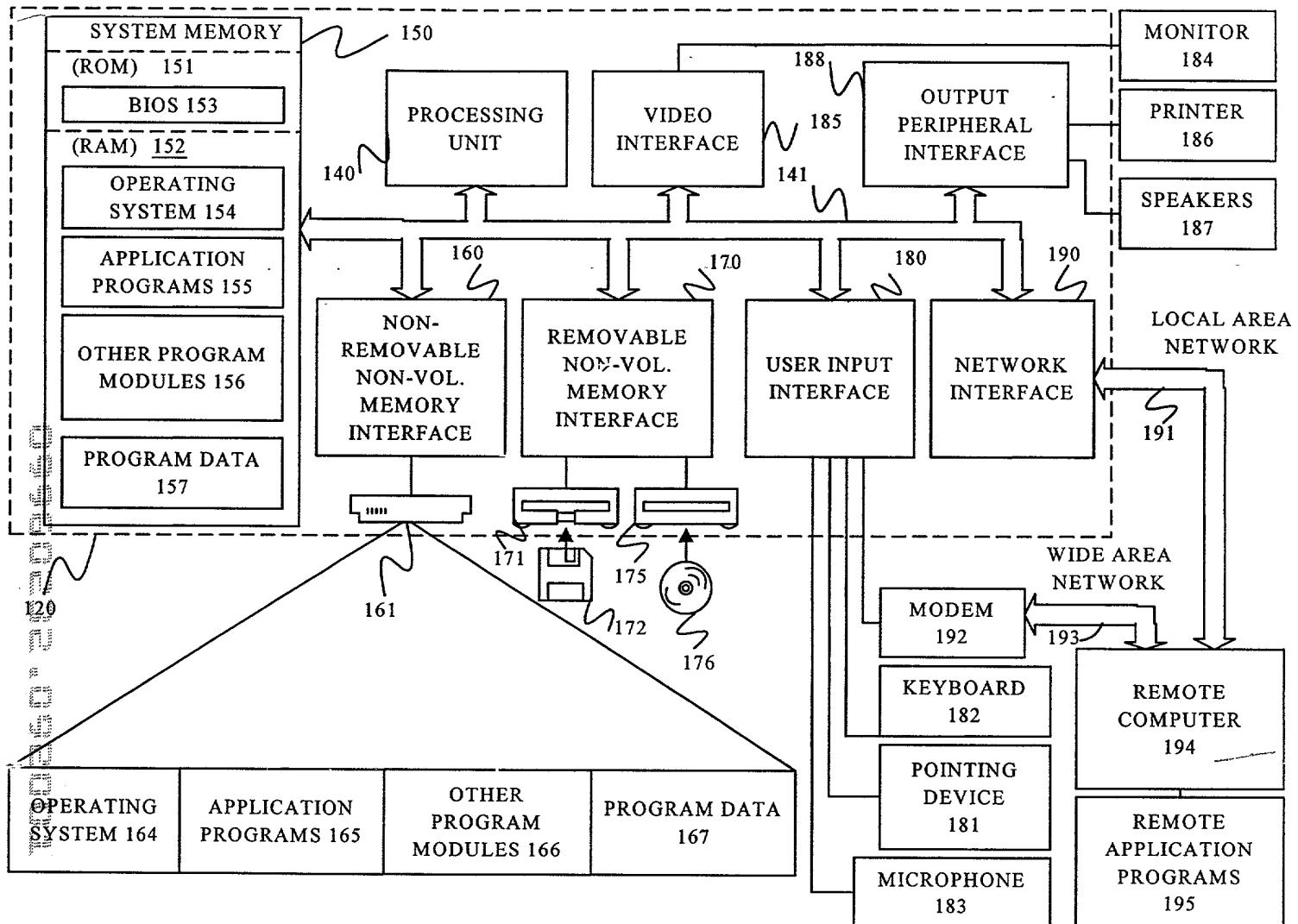


FIG. 4

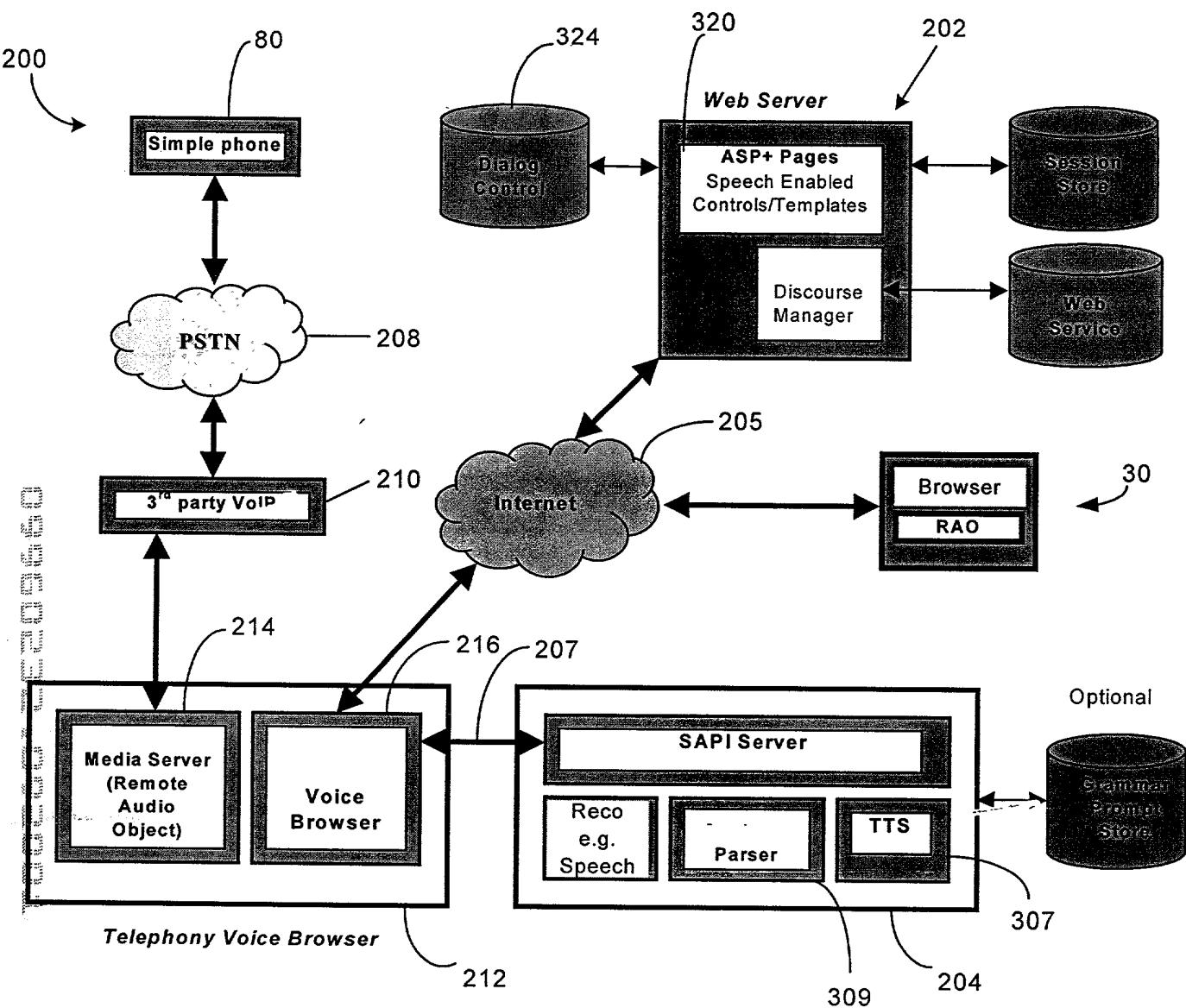


FIG. 5

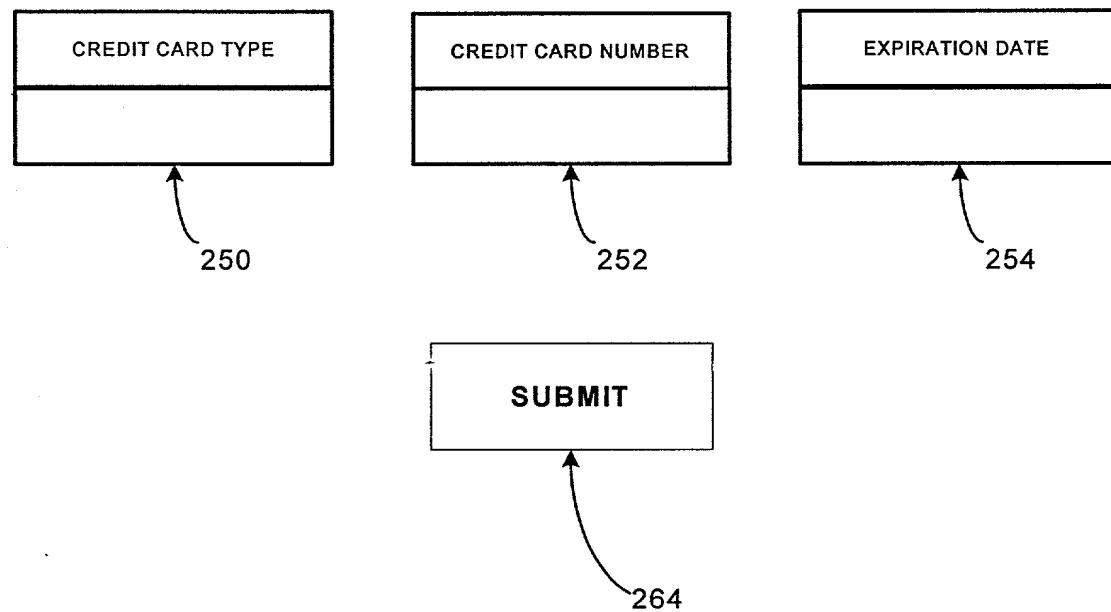


FIG. 6

```
<html>
 260  <form id="get_card_info" method="post" action="http://payment.asp">
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="ms">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30"
      onChange="handle()" />
    <input type="text" name="expiry_date" />
    <input type="submit" value="Submit" onClick="verify()" />
  </form>
 262  <script><![CDATA[
    function handle() {
      if (get_card_info.card_type.value == "amex") {
        if (get_card_info.card_num.length != 15)
          alert ("amex should have 15 digits");
      } else
        if (get_card_info.card_num.length != 16)
          alert ("visa and master should have 16 digits");
    }
    function verify() {
      var flag = window.confirm("submit the credit card info?");
      if (flag)
        get_card_info.submit();
    }
  ]]>
</script>
</html>
```

FIG. 7

```

270   <html>
271     <form id="get_card_info" method="post" action="http://payment.asp">
272       <select name="card_type" onClick="talk(g_card_types)">
273         <option value="amex">American Express</option>
274         <option value="visa">Visa</option>
275         <option value="ms">MasterCard</option>
276       </select>
277       <reco id="g_card_types" onReco = "handle()" >
278         < grammar  src=". /gram#card_types" />
279       </reco >
280       <input type="text" name="card_num" width="30"
281         onClick="talk(g_card_num)" />
282       <reco id=" g_card_num " onReco = "handle()" >
283         < grammar  src=" ./gram#digits" />
284       </reco >
285       <input type="text" name="expiry_date"
286         onClick="talk(g_expiry_date)" />
287       <reco id="g_expiry_date " >
288         < grammar  src = " ./gram#dates " />
289       </reco >
290       <input type="submit" value="Submit" onClick="verify()" />
291     </form>
292     <script><![CDATA[
293       function talk(gobj) {
294         gobj.activate();
295       }
296       function handle() {
297         if (get_card_info.card_num != null) {
298           if (get_card_info.card_type.value == "amex") {
299             if (get_card_info.card_num.length != 15)
300               alert ("amex should have 15 digits");
301           } else
302             if (get_card_info.card_num.length != 16)
303               alert ("visa and master should have 16 digits");
304           }
305         }
306         function verify() {
307           var flag = window.confirm("submit the credit card
308             info?");
309           if (flag) {
310             get_card_info.submit();
311           }
312         }
313       ]]>
314     </script>
315   </html>

```

FIG. 8

```

<body>
  <form id = "get_card_info" method = "post" action = "http://payment.asp"
    onActivate = "welcom()">
    < prompt id = "p_welcome" > We now need your credit card </ prompt >
    < prompt id = "p_mumble" > I didn't understand you </ prompt >
    < prompt id = "p_card_type" bargein = "true" > What credit card would you
      use? </ prompt >
    < prompt id = "p_card_num" bargein = "true" > Please say the number </ prompt >
    < prompt id = "p_expiry_date" bargein = "true" > What is the expiration
      date? </ prompt >
    < prompt id = "p_content" >
      I have your < value select = "card_type" /> < value select = "card_num" />
      with expiration date
      < value select = "expiry_date" />
    </ prompt >
    < prompt id = "p_confirm" > Is this correct? </ prompt >
    < reco id = "g_card_types" onNoReco = "mumble(this, 2)" >
      onReco = "_handle(this, card_type)" />
      < grammar src = "./gram#card_types" >
    </reco >
    < reco id = "g_card_num" onNoReco = "mumble(this, 1)" >
      onReco = "_handle(this, card_num)" />
      < grammar src = "./gram#digits" />
    </reco >
    < reco id = "g_expiry_date" onNoReco = "mumble(this, 1)" >
      onReco = "_handle(this, expiry_date)" audio = "rao" />
      < grammar src = "./gram#dates" />
    </reco >
    < reco id = "confirmation" onReco = "confirmed(this)" >
      < grammar src = "./gram#yesno" />
    </reco >
    < select name = "card_type" >
      < option value = "amex" > American Express </ option >
      < option value = "visa" > Visa </ option >
      < option value = "ms" > MasterCard </ option >
    </ select >
    < input type = "text" name = "card_num" width = "30" />
    < input type = "text" name = "expiry_date" />
    < input type = "submit" value = "Submit" />
  </form >
  < script ><![CDATA[
    function welcome() {
      p_welcome.active();
      repeat = 0;
      checkFilled();
    }
    function mumble(gobj, maxprompts) {
      gobj.deactivate();
      p_mumble.active();
      checkFilled();
    }
  ]]>

```

TO FIG. 9B

FIG. 9A

```

function _handle() {
    handle();
    checkFilled();
}
function checkFilled() {
    if (card_type.value == "") {
        p_card_type.active();
        g_card_types.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.active(); g_card_num.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_data.active(); g_expiry_date.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}
function confirmed(gobj) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit();
}
// user codes start here
// function handle() {
    if (get_card_info.card_type == "amex") {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else {
        if (get_card_info.card_num.length != 16) {
            prompt.speak ('visa and master should have 16 digits');
            get_card_info.card_num = "";
        }
    }
}
]]>
</script>
</body>

```

FIG. 9B

```

<body>
  <form id="get_card_info" method="post" action="http://payment.asp"
    onactivate="welcome()">
    <prompt id="p_welcome">We now need your credit card</prompt>
    <prompt id="p_mumble">I didn't understand you</prompt>
    <prompt id="p_card_type" bargein="true">What credit card would you
    use?</prompt>
    <prompt id="p_card_num" bargein="true">Please say the number</prompt>
    <prompt id="p_expiry_date" bargein="true">What is the expiration
    date?</prompt>
    <prompt id="p_content">
      I have your <value select="card_type" /><value select="card_num" />
      with expiration date <value select="expiry_date" />
    </prompt>
    <prompt id="p_confirm">Is this correct?</prompt>
    <reco id="g_get_card_info" onReco="_handle()" onNoReco="mumble(this)">
      <grammar src ="./gram/getPayment" />
      <bind target="card_type" value="/card/type" />
      <bind target="card_num" value="/card/number" />
      405 — <bind target="expiry_date" value="/card/expr_date" />
    </reco>
    <reco id="confirmation" onReco ="confirmed(this)" onNoReco="mumble(this)" />
      <grammar src ="./gram#yesno"/>
    </reco>
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="ms">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30" />
    <input type="text" name="expiry_date" />
    <input type="submit" value="Submit" />
  </form>
  <script><![CDATA[
    function welcome() {
      p_welcome.active();
      repeat = 0;
      checkFilled();
    }
    function mumble(gobj) {
      gobj.deactivate();
      p_mumble.active();
      checkFilled();
    }
    function _handle() {
      handle();
      checkFilled();
    }
  </script>

```

TO FIG. 10B

FIG. 10A

```

function checkFilled() {
    if (card_type.value == "") {
        p_card_type.active(); do_field.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.active(); do_field.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_data.active(); do_field.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}
function confirmed(gobj) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit(gensml());
}
// user codes start here
function handle() {
    if (field == get_card_info.card_num) {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa should have 15 digits");
            get_card_info.card_num = "";
        }
}
function gensml() {
    str = '<sml><credit_card type=""';
    str += card_type.value; str += '><number>';
    str += card_number.value; str += '</number><expire>';
    str += expiry_date.value; str +=
'</expire></credit_card></sml>';
    return str;
}
]]>
</script>
</body>

```

FIG. 10B

SAMPLE ASP+ PAGE

```
<%@ Page language="Jscript" AutoEventWireup="false"
Inherits="Credit.Transaction" %>
<html><head>
<!-- ASPX page for both voice-only &amp; multimodal credit card example --&gt;
&lt;script&gt;
function handle() {
    if (field == get_card_info.card_num) {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa should have 15 digits");
            get_card_info.card_num = "";
        }
    }
function gensml() {
    str = '&lt;sml&gt;&lt;credit_card&gt;&lt;card_type&gt;';
    str += card_type.value; str += '&lt;/card_type&gt;&lt;number&gt;';
    str += card_number.value; str += '&lt;/number&gt;&lt;expire&gt;';
    str += expiry_date.value; str += '&lt;/expire&gt;&lt;/credit_card&gt;&lt;/sml&gt;';
    return str;
}
&lt;/script&gt;
&lt;script runat="server"&gt;
function Page_Load (obj, args) {
    if (PostBack) {
        validator = new System.Speech.SMLValidator("./CreditSDL.xml");
        dsml = validator.Evaluate(args);
        Navigate(ChoosePage(dsml));
    } else {
        // initialize fields with args
    }
}
&lt;/script&gt;
&lt;/head&gt;
&lt;body&gt;
&lt;speech:form id="get_card_info" style="system_initiative"
    prompt=".//prompt/getPayment" onsubmit="gensml()"&gt;
    &lt;speech:choice name="card_type" prompt="What credit card would you
use?" grammar=".//gram#card_types" onPhraseFinish="handle()"
        &lt;option&gt;American Express&lt;/option&gt;
        &lt;option&gt;Visa&lt;/option&gt;
        &lt;option&gt;Mastercard &lt;/option&gt;
    &lt;/speech:choice&gt;
    &lt;speech:textbox name="card_number" prompt="Please say the number"
        grammar=".//gram#digits" onPhraseFinish="handle()&gt;
        &lt;speech:textbox name="expiry_date" prompt="What is the expiration
date? " grammar=".//gram#dates" onPhraseFinish="handle()"/&gt;
&lt;/speech:form&gt;
&lt;/body&gt;
&lt;/html&gt;</pre>
```

FIG.11

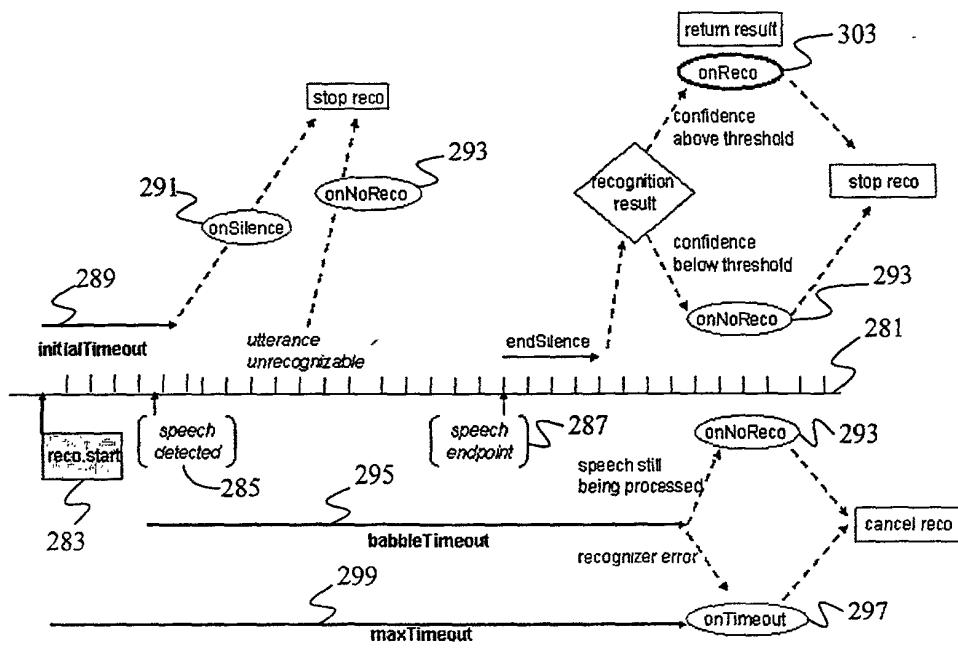


FIG. 12

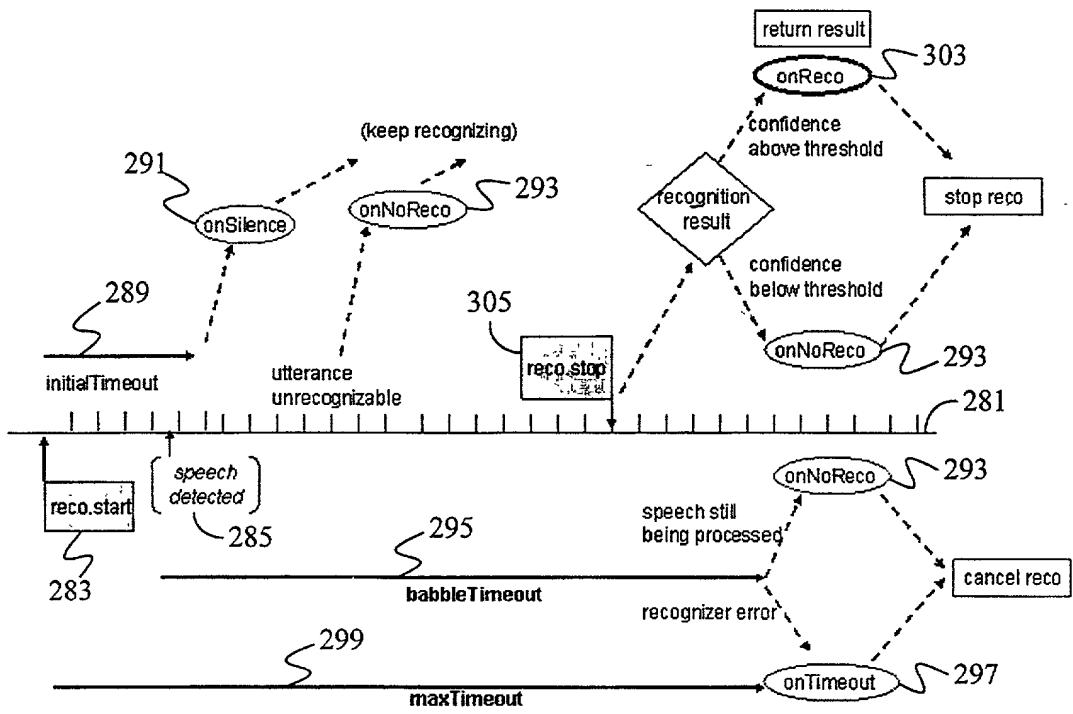


FIG. 13

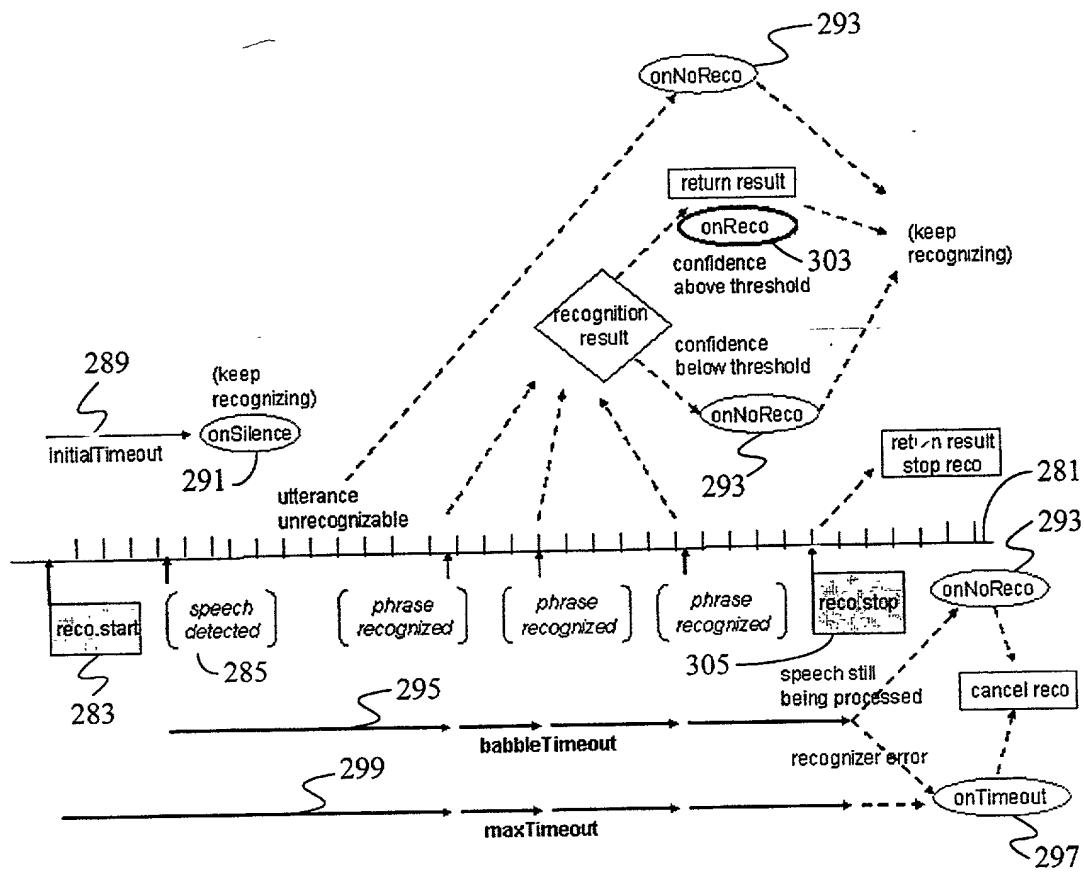


FIG. 14